MARSH BOTANICAL GARDEN PUBLICATION
NUMBER ONE

Connecticut's State Flower

THE MOUNTAIN LAUREL

A Forest Plant

BY

P. L. BUTTRICK, M.F.

SECRETARY OF THE
CONNECTICUT FORESTRY ASSOCIATION

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NEW HAVEN
MARSH BOTANICAL GARDEN OF YALE UNIVERSITY
1924

Photo by G. E. Nichols

MOUNTAIN LAUREL IN FULL BLOOM

Laurel seldom blooms well in the deep woods; but in glades and openings it blossoms abundantly, generally every other year.

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Connecticut's State Flower

THE MOUNTAIN LAUREL

A Forest Plant

INTRODUCTION

THE mountain laurel is one of the most beautiful of evergreen shrubs. It grows commonly in the shade of the forest, where its shiny leaves add a strong note of dark green to the paler greens of the summer woods. In winter its dark foliage shows boldly against the snows of the north and the bare browns of the leafless southern woods. In June it rises to the height of its glory, when it is covered with great clusters of pink flowers which give a rose-like glow to the whole underwood.

Its beauty, combined with its utility, causes it to be much sought after. Hundreds of tons of its foliage are used at Christmas. It is the most abundant of all holiday "greens." In early summer, florist's shops are full of its magnificent pale pink blooms, collected usually from wild plants, and week-end parties returning from the country come back laden with great clusters of its beautiful flowers. Naturally there is a great demand for entire plants for use in garden and estate planting. Finally, the wood itself has value, when it reaches sufficient size, for rustic work and for the manufacture of imitation brier pipes.

Beauty is sometimes its own reward, and it may be for a wild plant also the cause of its extermination. This is what may happen to the mountain laurel in the vicinity of our great cities. We need this plant because it is beautiful, and everything which is beautiful is useful, in that it makes life more worth while. If the mountain laurel were to disappear from the woods and hillsides of Connecticut it would be a great loss. Yet it is true that its foliage makes one of the best plant decorative materials we have and, properly used, adds its quota of beauty to its surroundings. If, without running any risk of exterminating our state flower, we can use its leaves for home and civic decoration the question arises, are we not justified in so doing?

Recognition of the beauty and value of the plant led to the present study in order to discover the important facts regarding its habits and use. It is only on the basis of such knowledge that practical plans can be worked out for its protection when this is essential, and for its intelligent treatment in our woodlands and pastures. The data here presented were gathered by the writer in Connecticut during the summer of 1923.

The investigation was made possible through the generosity of a friend of conservation, who has done large service in advancing the public appreciation for wild flowers and for the natural scenic features of Connecticut.

HOW THE MOUNTAIN LAUREL GOT ITS NAME

The Indians called this plant the spoon wood, since it served to make their simple eating implements—a purpose for which its hard, even-grained wood well adapted it. The early settlers used this name to some extent, but, following their custom, also gave it the name of a plant which it resembled in their old homes. The dark green leaves of the spoon wood resemble those of the true laurel, which is a small evergreen tree found on the shores of the Mediterranean, where it grows among the wild olives, the green oaks and the Italian cypresses characteristic of that part of the world. It was from this tree that the ancients plucked the leaves to make their crowns of victory. This laurel tree has been known as a greenhouse plant in England for centuries. It is occasionally seen in cultivation in America, chiefly in tubs or boxes, in conservatories, hotel lobbies, and clubs.

We are apparently indebted to that industrious traveler, colonizer, and writer, John Smith, for the first mention of the mountain laurel in English literature, for he writes of it in his *General History of Virginia*, published in 1624. Hendrick Hudson seems to have had it in mind when he wrote of finding rose trees on Cape Cod. Despite these and many other early references it was not until about 1750, when Peter Kalm, a Swedish traveler to America, sent specimens to the famous botanist Linnæus, that it received a scientific name. Linnæus found that it did not belong to any genus then known, and so established a new one for it,

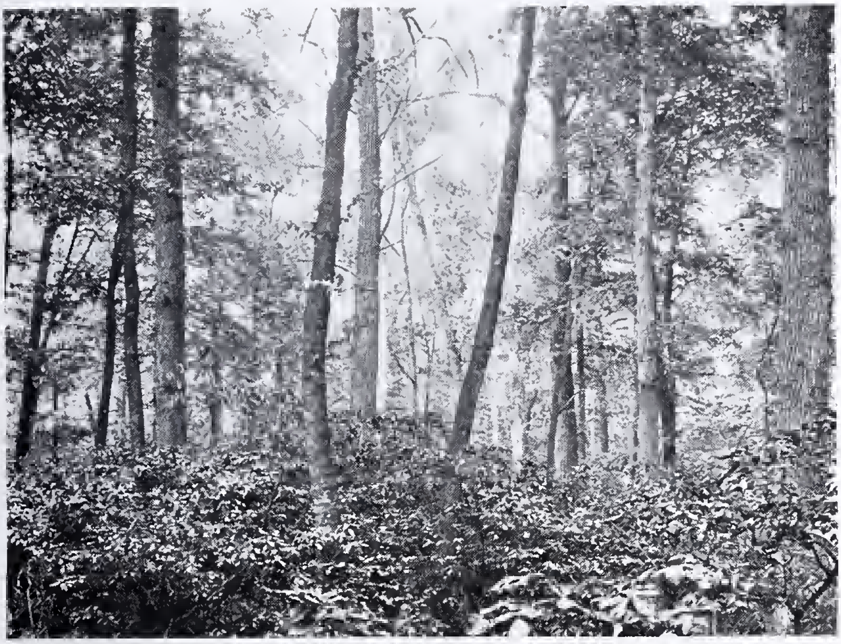

Photo by G. E. Nichols

A THICK GROUND COVER OF MOUNTAIN LAUREL

In places such as this laurel does not bloom well because of the dense shade. Its dark green foliage mass makes the woods more beautiful, but unfortunately sometimes it is so dense as to interfere with the growth of the trees.

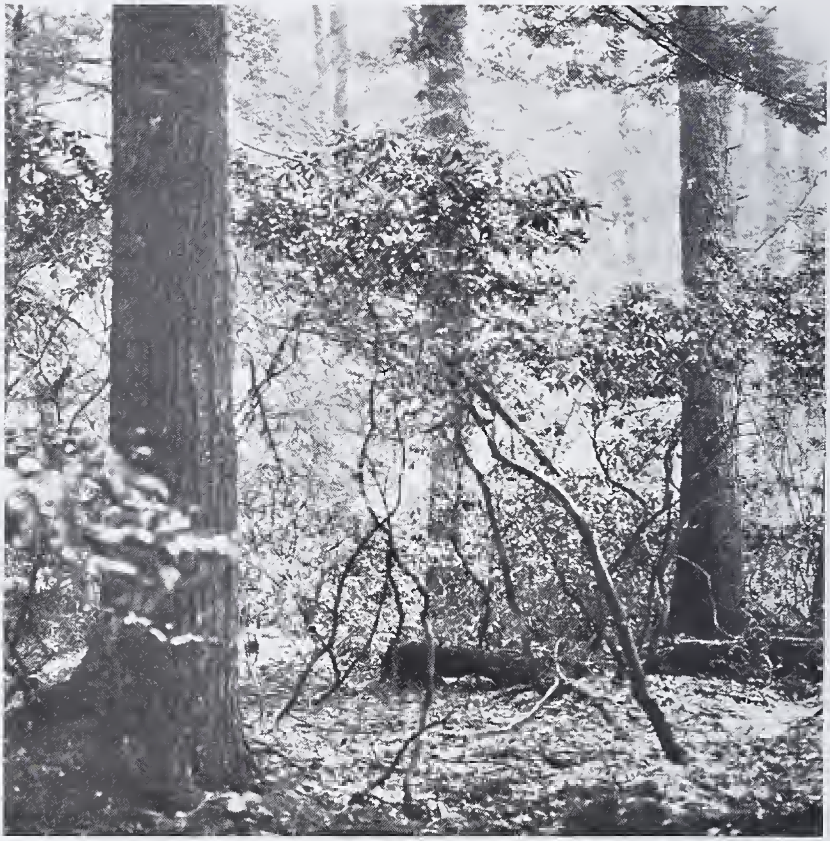

Photo by G. E. Nichols

HIGH LAUREL

When the woods are very thick they often shade out the laurel, and that which remains may become straggling and unsightly, except for occasional bushes, which are often quite interesting because of their gnarled and twisted stems.

calling it after Kalm. Thus it became *Kalmia latifolia, latifolia* meaning simply *wide-leaved.*

The name spoon wood has almost passed away, although a few farmers, in the remoter sections, still refer to it as such. Among farmers it is also sometimes called ivy, or mountain ivy, although it is not an ivy at all. Among the Southern Highlanders it sometimes passes under the name of calico bush, probably because of the pattern of its flowers. The name laurel is the one most commonly used, yet it is certainly incorrect, since it is not a true laurel. However, this name is far too well established to be supplanted. To avoid the dilemma some botanists refer to the plant as the American laurel, but this name is never heard in common speech. The word most commonly linked with laurel when this plant is meant is mountain. Since it reaches its best development in the Southern Appalachian Mountains, the name mountain laurel seems the most satisfactory, and is used in this report.

RELATIVES OF THE MOUNTAIN LAUREL

In addition to the mountain laurel there are three other species of the genus *Kalmia* known in the United States and one in Cuba. They are called collectively the kalmias. Aside from the mountain laurel the sheep, or narrow-leaved, laurel is the only one that is at all common, and it is a comparatively inconspicuous plant.

The kalmias belong to a large group of plants known scientifically as the *Ericaceae* or more popularly as the heaths. They are mostly woody plants with thick, leathery leaves and bright flowers. Many of them are evergreens. They grow characteristically on poor, rather acid, peaty soil. The famous Scotch heather is a member of this family. In America the azaleas and rhododendrons are the nearest relatives of the kalmias, although the blueberries and huckleberries are also "family connections."

The rhododendrons closely resemble the mountain laurel. Although rare in Connecticut, from Pennsylvania southward they are its common associates. Among the Southern Highlanders the larger rhododendrons are often called the great laurels. This is an interesting survival of the old English usage of the word great, which meant merely big or large. The rhododendrons are important decorative plants in cultivation but their foliage is too coarse to be useful for Christmas greens.

We call the mountain laurel an evergreen plant, because it always has green leaves, yet it sheds them regularly just as do plants which are not evergreens. The difference is that the mountain laurel retains its leaves till late in the summer of their second year, when they turn yellow and fall off. Consequently, in winter the plant has only about half as much foliage as in summer. Except when a branch is injured new leaves are formed only on the growth of the year, so that old plants have only a fringe of leaves at the branch tips, the rest of the plant being absolutely bare.

There is quite a difference in the size and form of the leaves and also in the intensity of their color. Sometimes they are long and relatively narrow in form, sometimes shorter and relatively wider. These variations in form are variations, no doubt, in the plants themselves, and some of them have been catalogued by botanists as special varieties of the plant, but the differences in intensity of green and of glossiness are probably due to the amount of shade which the plants receive. Those grown in the open appear generally to be the more shiny.

Late June is flowering time for the mountain laurel in Connecticut; in the South it is a little earlier. Further north July sees it at its best. Not every year is a "laurel year," as the years are called when the plant blossoms abundantly, but every year is a "laurel year" somewhere, and one may be expected every second or third year in any given section. Apparently the areas over which abundant blossoming is found in any one year are not particularly large. In Connecticut a county or two may one year exhibit blossoms in wonderful profusion, while the next county may show only scattering ones here and there. The following year conditions may be reversed. Occasionally sections are found where part of the plants blossom one year and part the next. Rarely a plant blossoms every year but seldom in the same abundance from year to year.

When the flowers first open they are rose pink in color, but after the lapse of a few days they bleach almost to white. As they fade they become brownish in color and in about a fortnight after first opening they shrivel up and are gone. In falling they expose the green seed-capsules, which, as they ripen, turn brown and by October or November open and shed their minute seeds—hundreds to the capsule. The clusters of empty seed-capsules sometimes remain on the plant for several years. The buds of the flower clusters appear in the summer of the year previous to their flowering, so that one may tell a year in advance where to look for next year's blooms. It is a fact not wholly appreciated that laurel plants grown in the open flower the most abundantly. In open woods mountain laurel blooms only sparingly; in deep woods, where the shade is more dense, scarcely at all.

HOW MOUNTAIN LAUREL GROWS

Mountain laurel has such a peculiar habit of growth that it is worth discussing in detail. In a flowering year the seeds are produced in countless billions. If sown in a nursery over ninety per cent of them ordinarily sprout, but despite the abundance of seed, seedlings are rare. Also they are inconspicuous. They look like wintergreen, and are often mistaken for it. People sometimes wonder why the wintergreen leaves they pluck have no taste, not knowing that they are chewing the leaves of young mountain laurel bushes. The seedlings are rare because the conditions under which the seed can germinate and grow are also rare. It is the old case of seed falling upon good ground and producing an hundred-fold and of that falling by the wayside being lost.

Apparently laurel seed germinates only when in contact with mineral soil. In the woods seedlings appear chiefly after logging has broken up the cover of leaves and twigs so that the soil is exposed or when it has been burned away by a light fire—a fire not heavy enough to kill the bushes which bear the seed.

When mountain laurel appears in the open it is generally in old pastures, but never very far from the woods where it grows naturally. It is something of a mystery how the seeds are transported. Are they carried by the birds? Do the squirrels bury them as they sometimes bury nuts? Or does the wind scatter the tiny seed far and wide as it scatters that of the birches which sometimes spring up so abundantly in old fields? Apparently the smaller birds do not eat mountain laurel seed, although some of the game birds do, notably the ruffed grouse, but their digestive processes destroy its fertility. The members of the squirrel tribe have never been observed transporting the seed-capsules. Although the seeds are very minute, the wind plays apparently little part in their distribution. Otherwise we would expect to find seedlings springing up at long distances from any existing plants. Perhaps the wind merely blows the seed-capsules along the snow crust, instead of moving the individual seeds through the air. We do not know. Nature guards her secrets closely.

At any rate when the seed germinates it sends out a single shoot, which at the end of a year is about two or three inches tall, the root being about the same length. At this stage the plant looks as though it were a tree seedling and therefore destined to have only one trunk, but the second year a group of some half-dozen side sprouts start from the root collar, as the botanists call the place where the root and the stem join. After three or four seasons these side shoots become indistinguishable from the original stem, thus forming the beginnings of a well-developed bush. It would be interesting to remove these so-called adventitious buds carefully from the plant in its first year, and see whether it would develop as a tree. However, after the first crop of side sprouts appear, normally no more are produced, and the plant, if not interfered with, develops with these half-dozen main shoots which grow upward and outward from the ground, so that it becomes more or less vase-shaped. Later in life, however, only two or three shoots survive, generally as twisted, irregular trunks. Rarely a single trunk survives the others, so that the plant has a rather precarious place in lists of our American trees.

It is only in the open or in openings of the woods that the mountain laurel is able to grow unhindered and take the forms described in the foregoing paragraph. In the woods its height is limited by the presence of the trees; its shoots extend laterally to take advantage of the side light and are often bent down by the dead leaves and branches falling from the tree tops. Where the snow lies deep, it tends further to weigh them down, until finally many of them lie in contact with the ground. Dead leaves and litter soon cover them and after a few years, when the débris has rotted and become part of the soil, they take root and give rise to new shoots. Where the contact with the parent is broken new plants are formed. This is the process of natural layering. Often, however, the contact is not broken, and thus the soil becomes filled with a dense, widely ramified set of laurel roots, and the surface becomes covered with a tangled mass of branches to the height of a man's knees. This tangled mass excludes almost all other vegetation from under the trees.

It is frequently asked, "How old do laurel bushes get to be, how big do they become, and how fast do they grow?" These are somewhat difficult questions to answer without further study than has yet been given to the matter. There are records of plants eighty-three years old, as measured by a count of the annual rings, just as the age of a tree is determined. There are also records of stems six inches in diameter and of plants thirty feet tall, both of unknown age. Whole areas in northern Connecticut are covered with plants averaging thirty to thirty-five years of age, and averaging upwards of twenty feet tall. There seems no reason why plants might not easily pass the century mark if grown under favorable conditions.

Young laurel bushes in the open usually grow about six inches a season in height. Later in life the growth rate falls off to a couple of inches, while in very old plants it diminishes to a fraction of an inch. Growth is always slower in the woods.

After cutting or fire vigorous plants send out shoots from their base which grow at the rate of from twelve to eighteen inches a season for the first few years.

The approximate age of a mountain laurel stem may be found somewhat as the age of a young white pine is determined, by counting the whorls of branches. The peculiar branching habit of the plant renders this possible. During the course of the year's growth two or three buds are formed at the tip of each branch. The next year each of these buds gives rise to a new branch. By counting these branching points or their scars the approximate age of the stem can be found. If this stem happens to be part of the original seedling it gives the age of the plant. But if this stem originated in a sprout from the roots of an older plant, the only way to be sure of the age of the original is to make a ring count through the base below the point of attachment of the branch.

MOUNTAIN LAUREL IN THE WOODS

Mountain laurel is a forest plant, growing usually under forest shade, and seldom found far beyond its borders. Whether we wish to preserve the laurel, to cultivate—or even to destroy it, we must consider it in its relation to the trees and the other woodland plants. This relationship is exceedingly complicated and varies in different places and in different kinds of woods.

Trees and other plants growing together in the woods all compete keenly for those things which are necessary for their growth, such as light, growing space, moisture, and the fertility of the soil.

These conditions are always changing—changing with the continued growth, death, and decay of the trees which go to make up the woods. Sometimes the changes produce conditions favorable to the mountain laurel—and it becomes abundant; sometimes they produce those unfavorable to it—and it almost disappears. In all this man has little part. He influences the laurel only as he affects the woods as a whole by such acts as lumbering, planting, or the setting of forest fires.

Of the factors which affect the growth of the mountain laurel in the woods the amount of light is probably the most important. Foresters call the plant "moderately tolerant," since it can grow in a certain amount of shade, but too much shade eventually kills it. Consequently, when the woods are young and the tree tops do not touch each other, the laurel thrives. As they grow older their tops finally meet, throwing a veil of shadows over the ground, which finally kills the laurel. Coniferous woods generally make a denser shade than hardwoods, so the laurel is destroyed sooner in them. If all our forests were, as the forester says, "of full density" they would contain no laurel. When the Indians roamed the woods they are supposed to have been much more dense than now and probably contained laurel only in small glades and openings. Probably there was less of our state flower in Connecticut when the Puritan fathers celebrated their first Thanksgiving than there is to-day.

When a piece of woods containing mountain laurel is cut over and the trees removed, conditions for the plant are at once improved. Light and growing space are abundant. So the laurel grows, bears seed, and produces new plants, and in a few years may cover the whole ground. Gradually, however, new trees start from seed or sprouts, push their way up through the ground cover and the shading process begins. Sometimes, however, the laurel gets such a good start after a clean cutting that the new trees are themselves crowded out to some degree and the young stand is slower in getting started and less dense than would have been the case had there been less laurel. This is more apt to happen when coniferous woods are cut than when hardwoods are, because the sprouts from the hardwood stumps grow fast enough to keep ahead of the laurel, but seedlings of the conifers cannot always do so.

Moisture and soil fertility, like light, play their part in the abundance of the mountain laurel but their effect is less easy to trace. However, it may be said definitely that the plant is not exacting in its moisture requirements. While it will not grow on very dry soils, neither is it often found in deep swamps, although it sometimes occurs in small amounts in their drier portions.

Mountain laurel, like all members of the heath family, requires a somewhat acid soil. Perhaps that is one reason why it is not common far from the shade of the forest, for the forest floor, with its abundance of litter, makes the surface layers of soil somewhat acid. Perhaps too much acid in the soil is unfavorable, and this may be another reason the plant does not thrive in dense woods. As yet no one has studied this phase of the question.

MOUNTAIN LAUREL IN OLD FIELDS AND PASTURES

Throughout Connecticut there are old fields, pastures, even orchards, which are growing up to brush and young trees. In the words of the forester they are "reverting to forest." In northern Connecticut mountain laurel commonly springs up in these old fields, although never far from woods where it already occurs; rarely this also happens in the central and southern part. This difference is probably accounted for by the colder climate of the northern section, which favors an accumulation of acid humus favorable to the growth of mountain laurel. Sometimes in the northern section the plant gets a good start and spreads over the whole field. Such a laurel pasture, beautiful at any time, when in bloom is a glorious sight worth traveling far to see.

Unfortunately we have sometimes to look at these pastures with other eyes than those of the beauty seeker. It would be unfair to say that farmers are not responsive to beauty, but the farmer confronted with the necessity of forcing a living out of a reluctant New England hill farm, can hardly be blamed if he cuts down laurel which would gradually spoil his much-needed pasture.

But a laurel pasture is but a phase—and a passing one—in the transformation of an open field into a forest. Light-seeded trees, such as birches and pines, and those with fruit which is scattered by the birds, such as red cedar and the cherries, come in along with or perhaps after the laurel and other bushes and sooner or later effect the transformation. In this the laurel both helps and hinders. It helps by killing out the grass and driving out the cattle, and perhaps by somewhat changing the character of the soil, making it better adapted to tree growth. It hinders by covering the ground with its dense shade, thus preventing the tree growth from starting so soon or coming in so thickly. The usual result is that the wood contains fewer trees than would have been the case had there been no laurel. However, the trees seem always sooner or later to conquer the laurel, so that the wood gradually grows up and shades it out. Other trees then come in to fill the gaps, yet it may be a full tree generation before the woods are as dense as they should be.

If the trees did not eventually conquer the laurel, we should have some of our Connecticut hills covered with a solid mass of glossy green foliage ablaze with color in June, thus forming an American counterpart of the heather-covered hills of the British Isles. It is probably well that our forest does reconquer its domain largely unaided under these circumstances. Otherwise expensive planting operations would be necessary to restore to prosperity idle acres now coming back to trees under the kindly hand of nature herself. If we regret the passing of laurel here and there we must not forget that the forest is in itself beautiful, and, in the eyes of many, nature's crowning artistic achievement.

FIRE AND OTHER NATURAL ENEMIES OF THE MOUNTAIN LAUREL

Forest fires are the most serious enemy of laurel which we have to-day in Connecticut. Severe forest fires not only burn up the tops but actually consume the roots of the plant; lighter fires kill only the tops, leaving them standing bare and unsightly and a serious menace in case of future fires. In the case of fine old bushes a single fire may spoil the growth of generations and leave only a few dead branches in place of a beautifully twisted and gnarled trunk. After a light fire has run through a laurel patch sprouts often start freely from the roots, yet it is apt to be many years before the new growth is as beautiful as the old. Repeated light fires such as frequently occur along the railroads or highways eventually accomplish the same thing as a single heavy fire.

The fire wardens have many things to say about mountain laurel, or ivy as they often call it, both good and bad. They agree that fires seldom start in laurel bushes, particularly when they form a thick cover. Under such conditions the soil remains damp. On the other hand, mountain laurel, because of its shaggy bark and easily inflammable wood and rather oily leaves, once it takes fire, burns fiercely and offers difficulties for the fire fighters. It is hard for them to get through, hard for them to use their tools in and burns with an oily, pungent odor which makes work near it disagreeable.

In the woods where the laurel was formerly thick and is beginning to die out, it creates such a severe fire hazard that its quick removal is justified and is sure to improve the beauty as well as the safety of these tracts.

For the last thirteen years there has been burned over annually an average of forty thousand seven hundred and fifty acres of forest land in the state of Connecticut alone, an area large enough to grow a year's supply of laurel for the trade in the entire United States. Of course not all the lands burned over are laurel lands, but doubtless at least a fourth of them are. If this is true, there is destroyed in Connecticut every year two and one-half times as much laurel as is used in the New York market.

Fortunately the mountain laurel is not one of those plants which has a host of plant and insect pests which disfigure and destroy it.

So far as known only one fungus and one insect do it enough harm to be worth mention. The fungus attacks the leaves and causes them to become spotted with yellow, thus spoiling them for decorative purposes. It seems to confine its attacks largely to the second-year leaves and to be most prevalent late in the summer. As these second-year leaves generally fall before collecting begins it is of little importance.

An insect, one of the so-called lace bugs, which is often found on cultivated rhododendrons, has escaped to wild laurel in the northwestern part of the state and sometimes disfigures the leaves by covering them with white spots where it has sucked the plant juices and deposited its excrement. If sufficiently abundant on ornamental bushes to justify treatment, spraying will control it.

MOUNTAIN LAUREL IN RELATION TO FORESTRY

Forestry means the management of forests to increase their usefulness to mankind. To this end some forests must be made to produce the greatest possible amount of wood supplies, while others best serve our needs by being cultivated simply for their beauty. Timber lands and woodlots belong to the class of forests which are cultivated to produce timber. Timber production forestry should be practiced upon them. Private estates and public parks are generally managed so as to produce the kind of forests which are the most beautiful and therefore most suited to recreation. Landscape forestry should be used in their management.

How does the growing of mountain laurel fit into these methods of forest management? Will timber production forestry condemn it utterly because, forsooth, laurel wood will never produce boards or pulpwood? On the other hand does landscape forestry say, "Laurel is beautiful: therefore we must always encourage it?" No forester would endorse either of these extreme views.

The presence of laurel in timber production forests may be looked at in several different lights, varying according to the conditions. If it is so abundant as to interfere with the growth of the trees, it should be discouraged, but this is rather unusual in well-established woodlands. If there is a market for it so that it can be harvested and sold it may be regarded as an asset. If it is neither abundant enough to interfere with the growth of the timber nor valuable commercially it may be regarded more or less indifferently.

From a landscape point of view, properly cared for woods are beautiful, whether they contain mountain laurel or not. Its presence increases the beauty of some forms of woods and decreases that of others. A carpet of laurel may greatly increase the rather poor scenic appeal made by a straggling stand of poorly developed hardwoods, but a fine stand of mature pine is more beautiful with no ground cover other than pine needles. Even a stand of small trees such as gray birch or red cedar has a scenic quality that in most people's eyes the laurel does nothing to improve.

Most of our Connecticut woodland is what the forester calls mixed hardwoods, and a reasonable amount of laurel growth beautifies it appreciably, especially in winter. If it increases too greatly and gets to be more than an average of three feet high the bushes are apt to be straggling and to interfere with the view of the tree trunks and it then becomes more of a detriment to forest beauty than a help, so that a judicious thinning out of the larger plants will result in a distinct improvement.

Mountain laurel, as has already been said, does not thrive under too much shade; therefore, as a forest becomes older, the laurel bushes begin to die out and become unsightly in consequence.

This is the condition of much of the woodland in parts of northern Connecticut to-day. The removal of much of this dying laurel would greatly improve the beauty of these woods and decrease the fire risk in them. Very old laurel bushes reduced to a few twisted branches with their finely striped grayish bark are often things of beauty in themselves, although their leaves are confined to a fringe at the top and their evergreen character is little noticed. A few such plants scattered here and there in mature woods are distinctly a landscape asset.

By the use of intensive forestry methods mountain laurel generally can be increased or diminished in any piece of woodland with little expense or trouble. If a thick carpet over the surface is desired, the plant can be forced to extend itself by bending down the lower branches and fastening them to the ground so that layering will take place, and by occasionally removing the upper branches. If a few large plants are desired scattered about in the woods, the lower branches of the clumps should be removed and the overhead cover of trees be thinned out slightly to give enough light for the shoots to grow upwards.

Often the most attractive laurel found in the woods is that which grows along the edges of roads and paths and in small openings, but as the woods develop it becomes overshadowed and finally dies out. Here it may safely be encouraged even in timber producing forests since it does not interfere with tree growth. In order to preserve and encourage the plant under these conditions, it may frequently be necessary to cut some of the smaller overhead trees.

In old pastures where it is desirable to preserve the laurel, cattle grazing is a help, since it tends to keep out other things which might interfere with the laurel growth. If grazing is stopped it may be necessary to cut the other brush and small trees to prevent them from suppressing it.

MOUNTAIN LAUREL IN CULTIVATION

A beautiful plant such as mountain laurel naturally attracts the attention of gardeners. John Bartram, a famous American gardener and botanist of the colonial period, was apparently the first to cultivate it extensively. He not only grew it, but sent plants to gardeners in England nearly twenty years before Linnæus gave it its name.

As an ornamental broad-leaved evergreen shrub, mountain laurel vies with the rhododendrons, but does not usually reach such large size; perhaps it is more hardy in our rather dry northern climate.

Gardeners have developed many interesting and beautiful varieties of rhododendrons by breeding and grafting. It would seem as though there would be an equal field for this with the mountain laurel, yet it does not appear to have attracted their attention in this respect.

Wild laurel is difficult for inexperienced persons to transplant successfully, yet professional and skilled amateur collectors do so constantly. There is a small trade in collection of such plants for transplanting to gardens. They are often cheaper than those obtained from nurseries. Collection is restricted to the best seed-grown plants of small or moderate size and is too limited to be an important factor in the general abundance of wild laurel.

Indiscriminate collection of plants by persons who are unfamiliar with proper methods of so doing and who collect without reference to the ownership of the land upon which they operate cannot be too strongly condemned. Most of the plants so collected fail to live and are often taken from places where their natural beauty is very great.

In transplanting laurel it is important to choose plants with a well-balanced relation between root and top, and to secure as much as possible of the root system. The tops should be cut back somewhat by removing occasional branches. After setting, the plants should be mulched carefully. Either spring or fall will do for transplanting. The soil should be moderately moist and the site not too exposed. A little overhead shade will do no harm but too much should be avoided. Some authorities recommend watering with water containing a slight amount of acid.

In the greenhouse, plants are usually grown from seed, although it is possible to reproduce them from shoot cuttings. This process is difficult and may require as much as two years to accomplish. It requires about five years for seedling plants to become large enough to be set in permanent locations, and about ten years for them to become really effective for landscape purposes.

THE TRADE IN MOUNTAIN LAUREL FOLIAGE AND HOW IT IS CARRIED ON

Every Christmas season, and to a lesser extent at other times, great quantities of mountain laurel are used for decorative purposes. It is made up into chains, wreaths, clusters, and floral pieces. It is employed to decorate windows, tables, stores, homes, and even entire streets and cities. If not the most beautiful Christmas evergreen, it is certainly the most abundant in this part of the world. The amount used far outstrips that of holly, ferns, pine boughs, or mistletoe. The collection of laurel forms a considerable business and the story of it is interesting—it would make good Sunday supplement material for almost any newspaper. The supply used in our large cities comes from places well scattered over the entire range of the plant. Shipments come to the New York market from as near by as Connecticut and Long Island and as far away as Georgia. The trade of the large northern cities is largely in the hands of a few wholesale florists in New York and Boston. In most of the cities of Connecticut, local florists and decorators who handle laurel purchase it locally from small collectors or from the larger firms.

The large firms send out their own collecting gangs or purchase from collectors. There are a few local dealers in small towns in regions where laurel is abundant, who ship it into the large cities to wholesale firms, using local help to collect their supply. But most of the pickers are men who follow the work regularly. They are sent about the country by the larger firms in gangs. These gangs are generally composed of foreigners, often Greeks or Italians. They frequently are of a class which has no great regard for property rights, and they are apt to do their collecting where it is most convenient—without regard to the desires of the owner of the land. Occasionally they have succeeded by superior numbers in driving off owners who wished to eject them and in escaping with their booty. They often break down fences, cut trees, and otherwise injure the property upon which they are collecting and have even been accused of setting forest fires to cover their trail. The larger dealers pay the collectors without inquiring as to the source of supply, and probably a great deal of the laurel which reaches the market is stolen from the landowners. Collecting is carried on throughout the year but, in Connecticut at least, October is the month when laurel picking, as it is called, is at its height.

The picking methods are interesting. Only the best branches are taken. They are broken off about eighteen inches back from their tips. Branches with flower heads are avoided. After picking, the foliage is bundled together, sometimes with the leaves out, sometimes with the twigs out, and the bundles are covered with deciduous leaves or ferns to protect them. They weigh from fifty to one hundred pounds. Shipment is by rail or occasionally by motor truck.

Arriving at its destination in the large cities, the laurel is either placed in cold storage or is sold immediately to retailers. The wholesale houses frequently make the sprays of foliage up into roping, which is much in demand for all sorts of decorative purposes.

It is difficult to estimate the amount of laurel used, but the New York dealer who claims to handle the largest amount says he uses three hundred tons per annum; another who considers it a side line says he handles forty tons a year. The figure of one thousand tons per year would probably cover the New York market. Let us assume that Boston consumes as much (although a responsible dealer says about two hundred tons a year are used in that city), Philadelphia the same amount, and Washington and Baltimore together the same amount. This would make a total of four thousand tons for the chief consuming centers along the eastern seaboard. If we double the figure for the local trade over the entire East we are more liable to over- than under-estimate the amount used in this way. Laurel is not shipped much to the western states, but to be on the safe side let us add two thousand tons for the western territory. We then arrive at a rough estimate of ten thousand tons as the maximum amount of laurel used annually in the United States for decorative purposes. This seems a large amount but unless we can turn it into acres it conveys but little to our minds. It is difficult to secure accurate figures of yields per acre but it is certain that some acres will yield several tons, for the plant is heavy. It would probably not pay to collect on land yielding less than a quarter of a ton per acre. Thus if we accept the maximum cut as ten thousand tons per year we can say that on the outside forty thousand acres are cut over annually for laurel. A new crop could be secured by proper methods every five years from the same land. In other words one hundred and twenty thousand acres would probably grow all the laurel required by the commercial trade indefinitely, and there is more than ten times that much woodland in Connecticut.

Mountain laurel sells for an average price of two and one-half cents per pound or fifty dollars a ton wholesale, delivered in New York. On the basis of a thousand tons a year shipped into the city, its wholesale value would be about $50,000. The retail prices are not standardized, but often amount to as much as twenty-five cents a half dozen sprays when sold at florists' stands. It is easy to see that the trade is by no means unprofitable.

What is the value of mountain laurel, suitable for decorative purposes, when it is growing in the woods in Connecticut? To arrive at an estimate we must consider the costs of transportation and collecting. From Connecticut points the express rate on Christmas greens into New York is about one dollar per hundred pounds, while by freight in car-load lots it is about thirty-five cents per hundred pounds, or twenty dollars per ton by express and six dollars and fifty cents per ton by freight. Apparently most of the Connecticut supply is shipped by express. Assuming a twenty-dollar rate for shipment per ton this leaves thirty dollars to cover the purchase of the plant from the owner, its collection and delivery at the railway station. It would seem that one-third of this, or ten dollars per ton, would not be an unreasonable sum for an owner to charge for laurel cut on his lands. Considering a quarter of a ton per acre as a minimum yield the owner should expect to receive two dollars and fifty cents per acre for the collecting privileges.

The objection to this line of reasoning is that many farmers are glad to be rid of their laurel and so give it away or allow it to be stolen. Thus dealers frequently get their entire supply without paying anything, or at least only a nominal price. Consequently, until the business of growing and marketing laurel is better developed, owners may have to accept a much lower rate than the selling price seems to justify. This matter is discussed further in the section entitled Growing Mountain Laurel for the Market. See page 24.

THE CONNECTICUT LAUREL LAW AND HOW IT IS ENFORCED

The unrestricted collecting of wild laurel in Connecticut reached such a point a few years ago that there was a popular movement for its regulation. This resulted in the passage of the so-called Laurel Law—a law which put Connecticut in the front rank in the enactment of what are sometimes called "Game Laws for Plants." These are laws designed to prevent the destruction of wild native plants. The Laurel Law, although originally enacted to protect mountain laurel and evergreens, has since been amended to cover ferns, vines, and foliage branches of all sorts, as well as specifically to protect evergreen Christmas trees. Its provisions regarding mountain laurel are:—

1. That no person shall collect it upon the land of another for commercial purposes without written permission of the owner filed with the clerk of the town in which the land is located.

2. That no bale, box, package, or load containing mountain laurel can be legally transported or shipped by rail or highway unless it is tagged to indicate the name of the owner of the land from which it was taken and the name of the collector.

3. The owner or agent may arrest without warrant any violator of this law and may be allowed court fees for so doing.

It is difficult to see how this law could be made much stronger. To prohibit the collection of mountain laurel under all circumstances would involve the question of infringement of the property rights of the owner in the use of the products of his lands as he sees fit. Wild plants are the property of the owner of the land upon which they grow; they are not like game, which is the property of the state, because it is free to pass from the lands of one person to those of another.

The effectiveness of a law depends upon its enforcement. How is this law enforced? Like any other law, it is enforced to the extent that people want it enforced. No law is self-enforcing, least of all a law such as the one under consideration, in which relatively few people or officers are specifically interested. Yet there is no question that its operation has considerably diminished illegal collecting. Evasions occur of course, chiefly because it is possible to secure collecting permission from one owner and then to steal from others near by, and finally to ship out the entire lot under one certificate of ownership.

Interested organizations can do much directly to aid in the enforcement of the law by posting notices of intent to prosecute evasions of the law, by watching the highways, railroad stations, and woods of their communities to detect violations, and by notifying proper officials if such are discovered. Since, however, a law

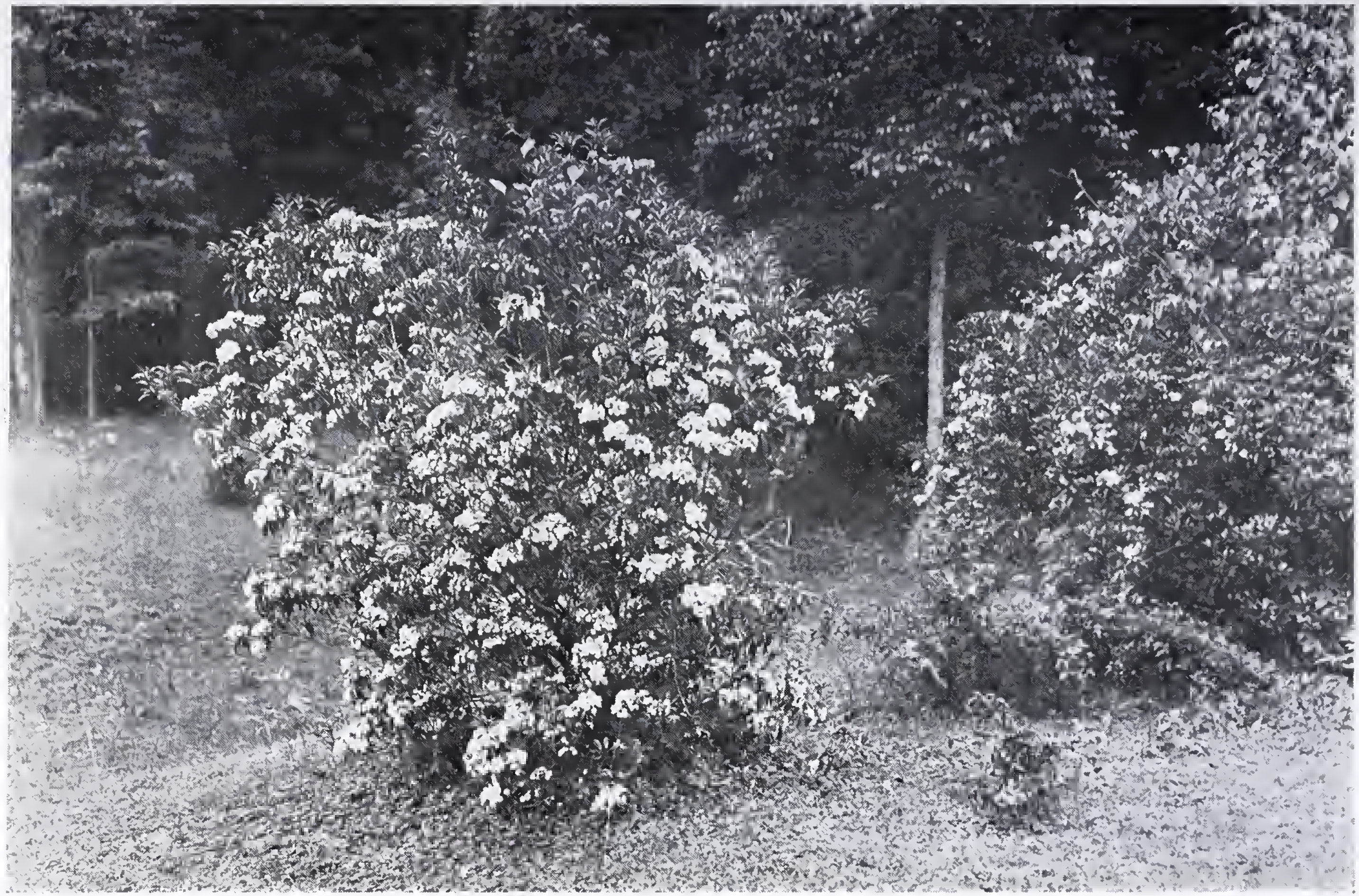

Photo from Wild Flower Preservation Society of America

A CLUMP OF MOUNTAIN LAUREL GROWING IN THE OPEN AT THE EDGE OF THE WOODS

In such localities as this it develops in a characteristic vase-shaped form and blossoms most abundantly.

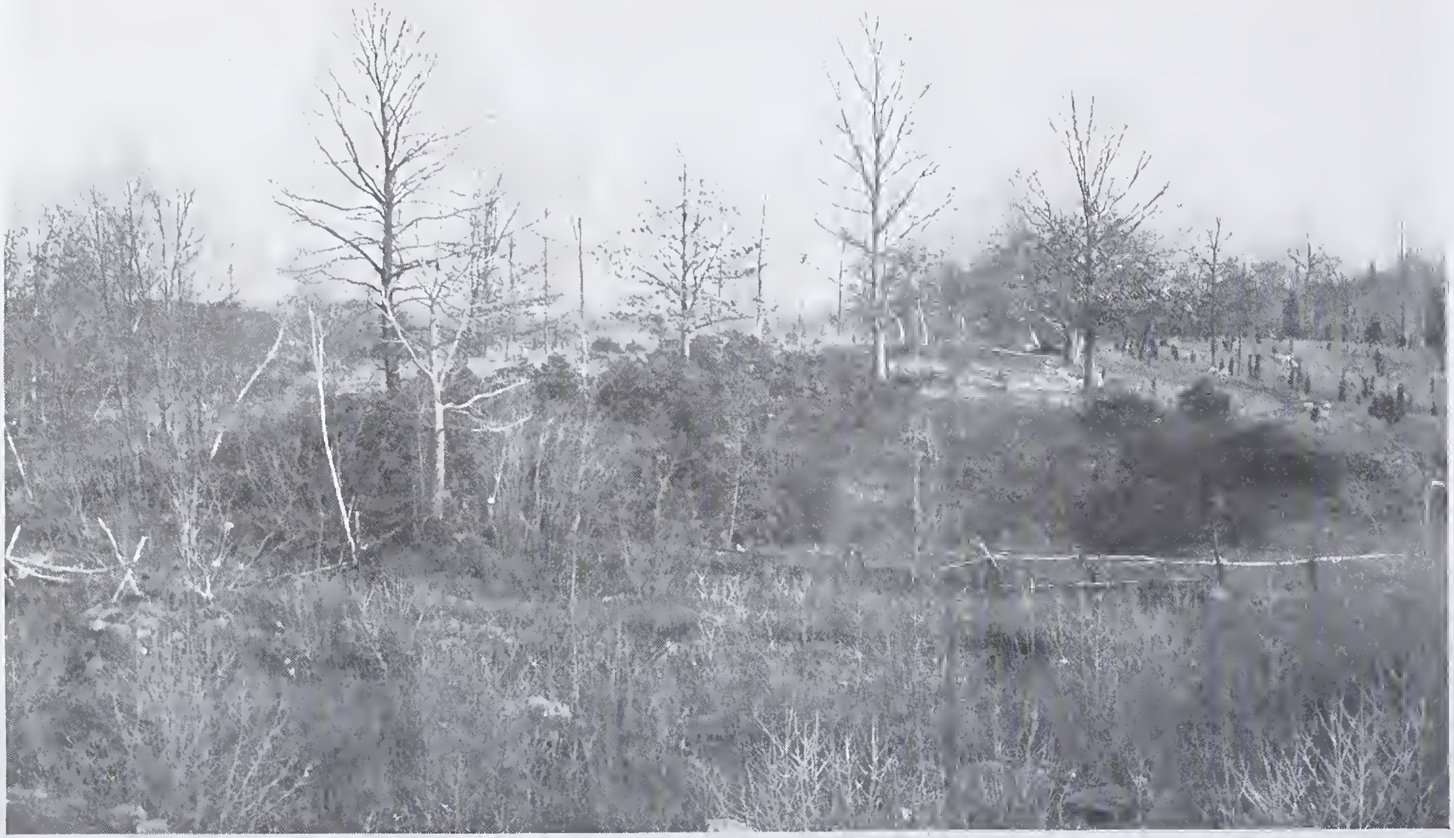

Photo by W. O. Filley

MOUNTAIN LAUREL SEEDING IN ON AN OLD PASTURE

This is a common occurrence in parts of Connecticut. It is part of the transformation of open land into forests. Sometimes the laurel aids and sometimes it hinders this transformation.

such as the one in question is lived up to fully only when nearly everyone believes in it, it is necessary to carry on a campaign of education until a public appreciation of the usefulness of the laurel to the state is fully realized. Civic associations, garden clubs, and other organizations of a like nature can do much in this regard.

A recent factor in diminution of laurel shipments out of the state has been the federal gypsy moth quarantine, which prevents shipment of mountain laurel or other plant material outside the zone of gypsy moth infestation without a government inspection. Such inspection is intended to prevent this dangerous insect from being carried to regions where it is now happily unknown. The infested zone in Connecticut covers nearly all the territory east of the Connecticut River and parts of the center of the state. The officers making inspections have a check on the locality of shipments, which makes shippers more careful to obey the state law.

SHOULD THE USE OF MOUNTAIN LAUREL FOLIAGE FOR DECORATIVE PURPOSES BE DISCOURAGED?

Such large quantities of laurel foliage and flowers are used for civic, commercial, and home decoration that many people, fearing that the plant will become rare, wish to discourage its use. In order to decide whether such a course is wise we must answer the following questions: first, does the decorative value of cut laurel justify its use; second, is the plant in danger of extermination or is it likely to become extremely rare as a result of collecting operations; third, is there any more abundant plant which could be substituted for laurel as a decorative material; fourth, in case the wild supply should become too rare to justify its collection, would it be possible to grow it commercially to meet the demand?

Does the æsthetic value of laurel foliage when used for civic or commercial decoration justify its use? This is somewhat a matter of opinion, yet the writer of this report cannot but feel that on the whole it does—although he realizes fully that not all arrangements of it are artistically correct or in good taste. Our cities, shops, and homes are none too beautiful. If we can improve their appearance without endangering the beauty of our woods and fields is it not well to do so?

There appears to be little danger of exterminating the mountain laurel by picking its flowers, since the plant is not entirely dependent upon its seeds to reproduce itself; but such picking frequently spoils the appearance of the most beautiful and easily seen clumps. Prolonged and intensive collecting of the foliage in any region would certainly exterminate the plant in that locality and has already made it somewhat rare in the vicinity of some of our large cities. But collecting, if properly regulated as described in the next section, could be carried on indefinitely without danger.

There is a much larger supply of laurel than of any other plant used for Christmas greens. Holly, for example, is much rarer and its extermination more to be feared. It is possible to use the boughs of coniferous trees such as pine, cedar, or hemlock, but their collection in large volume might result in the stripping of all evergreen trees in our woods, which would mean a great loss to their beauty and to our future timber supply.

Finally, it is easily possible to grow laurel for the market where the value of the crop justifies landowners in so doing, as will be discussed in the next section.

In view of all these things it would not seem wise to attempt to prohibit or discourage all collection of laurel, yet in order to safeguard the beauty of our fields and forests it is essential that in any section where the plant is threatened, local protection should be afforded it, and in every case indiscriminate collecting without permission of the owner, or in such manner as to endanger the welfare of the forest or the plant itself, should be discouraged.

Furthermore, as matters now stand, much of the mountain laurel used for decorative purposes is stolen, or at least collected without regard to the welfare or beauty of the forest. Therefore, communities using it for civic decoration should be certain that their supply is legally and properly collected, otherwise there is bound to be a perfectly justifiable prejudice against its use, whatever its decorative value.

It also goes without saying that when laurel is used for civic decoration it should be used in an artistic manner. It is not within the province of a report such as this to discuss this phase of the subject, yet it seems that the chief effect of laurel used as a decorative material is derived from its color, which is most effective when massed rather than when scattered about in small groups.

GROWING MOUNTAIN LAUREL FOR THE MARKET

If we accept the view expressed in the previous section, that the use of laurel for decorative purposes is legitimate, and at the same time recognize that over-collection could eventually cause its extermination, the logical conclusion seems to be to encourage the production of a supply for the market.

From the point of view of progressive dealers this would be highly desirable. It would at once insure them a steady source of supply and it would remove from their business the stigma of being one that tended to destroy more or less permanent beauty in one place to create temporary beauty in another.

From the point of view of those interested in the protection of our wild plants and natural scenery there need be no objection to the use of laurel leaves for decoration if they were grown for that purpose—any more than to the use of hothouse roses.

From the point of view of the forester the growing of laurel for the market would be very desirable. One objection to forestry as a business is that it takes so long to mature a crop of timber. Under ordinary conditions twenty years is the shortest period which can produce a wood crop of any sort. Such a short period produces only firewood, which does not yield much revenue, but if mountain laurel were already established in a piece of woods, a crop could be produced from sprouts every four or five years. In other words at least four crops of laurel can be produced to one of trees, and on the same area—provided the plants are not so thick as to interfere with the trees. Assuming that the owner receives only fifty cents an acre for the collecting privilege, or sells the cut laurel at one dollar per hundred pounds, it would often pay the taxes on the land, thus making the final return from the timber greater.

The growing of laurel for the sale of its foliage would be quite different from its cultivation for ornamental use in gardens. Its production for market could best take place in woodland, and advantage would be taken of its sprouting power. No attempt would be made to grow it from seed or to produce large and handsome clumps.

The cutting of laurel so that it will sprout satisfactorily and produce further crops is quite simple. Ordinarily collectors cut or break it off at about eighteen inches back from the tips of the branches. Inferior branches are apt to be left growing. A good second growth seldom follows such a cutting. To secure a good second crop the cut should be made close to the root and those parts of the plant not useful for decorating purposes should be discarded.

What are the possibilities of farmers and other owners of woodland actually handling their laurel in this way? In the neighborhood of cities, collecting privileges are sometimes sold, while some farmers cut the laurel themselves and bring it in to dealers. Farther back in the country, owners are less apt to demand a price for collecting privileges and are sometimes indifferent when the plant is stolen from their lands. If every owner valued his laurel and demanded a price for it, several things would result. First, some collectors would go to those sections where, because of a superabundance, it is regarded as something of a pest and therefore where they might expect to get it for little or nothing. This would result in its partial removal where it is too abundant for the good of the forest. Second, dealers who preferred to pay a reasonable price would be sure of a definite supply, which would lessen the danger of its being stolen indiscriminately. All these things would tend to build up a stabilized business in the growing and marketing of laurel instead of the present condition, which is unsatisfactory from a public-spirited viewpoint.

WHAT SHOULD BE THE POLICY OF LANDOWNERS AND THE PUBLIC IN REGARD TO MOUNTAIN LAUREL?

The people of Connecticut have a responsibility towards the mountain laurel, not alone because it is their State flower but because it is an asset to the State both financially and from a landscape point of view, and even more because it is bound up with our forestry problem, which is one of vital importance to the public welfare.

This responsibility should be discharged so that there will be enough laurel on the landscape for everyone to enjoy. At the same time provision should be made for legitimate collecting, and it should not be expected that owners will maintain an excess of laurel in their woods and pastures when it interferes with the best use of their land for timber production or grazing.

To accomplish these aims different plans of management are required on different areas, such as along roadsides, in public parks, in public forests, on home grounds and private estates, in farm woodlots, and in old pastures.

It is often said that special attempts should be made to protect and to grow laurel along the roadsides, since it would add much to their beauty and would be where everyone could enjoy it. This would be very desirable, yet it is difficult to work out a plan likely to be successful without a broad consideration of the whole subject of landscape improvement of our highways. Such a plan would naturally include all classes of vegetation, trees, shrubbery, and grass, using each alone or in combination as was best suited to the landscape requirements of each particular road. In any such plan the mountain laurel would naturally find its proper place. Any adequate plan of highway landscape development would also have to consider the careful regulation of electric wire lines and signboards on the highways, so that they would not interfere with the trees or otherwise detract from the natural beauties of the road.

It has been proposed that special laurel reservations be established at favorable localities along our highways, these reservations to be administered by the State Park and Forest Commission or by local communities. Such plans might well be sponsored by organizations particularly interested in the preservation of wild flowers.

There seems no reason why mountain laurel should not be featured in our public parks, town, city, and state, wherever conditions are favorable for it and wherever its growth would not interfere with any other natural beauty or plan of development. It exists naturally in most of our State Parks and will, of course, be protected upon them where landscape forestry makes it desirable. To conserve laurel in regions where it is becoming rare is one reason we should have more public parks.

On the State Forests, where one of the objects is to produce timber, too much laurel might be a disadvantage, but, on the other hand, the beauty of the finely developed forest would more than compensate for the comparative rarity of laurel or any other particular plant. Experiments in regard to the growth and collection of laurel for the market are being carried out on State Forests, since part of their function is to develop forestry methods, and growth of laurel to supply the market might, if private owners failed to develop the business, become part of their service to the State.

On home grounds as much laurel as is reasonably possible should be planted where all may see it. On estate woodlands mountain laurel should be handled under the principles of landscape forestry, as discussed in another section, so as to produce the most beauty not only from the laurel but from the woods as a whole.

The farmer who wishes to grow the most wood possible in his woodlot may well be excused if he cuts out such laurel as interferes with the proper growth of his trees, but would be unwise if he removed it all, since a commercial market is gradually developing for it. The farmer who is expecting sooner or later to dispose of his woods for residence or estate purposes should guard his laurel carefully, as woods containing the plant often sell for more than those without it.

Owners who possess laurel pastures may wish to do three things: first, keep them as they are for their beauty; second, keep them as pasture land; third, allow them to revert to woodland. In the first case the laurel should be encouraged by the removal of the other woody plants. In the second case the laurel should be removed along with the other brush. In the third case the laurel should be removed before it interferes with the young trees.

It will be observed that some of these things concern the public at large and some the individual landowner. We can only secure public reservations for park and forestry purposes and roadside improvement by concerted public action,—at the polls and through clubs, associations, and the like, that will work for these things.

The private owner is free to manage his holdings as he sees fit, and in a measure if he allows his laurel to be stolen or destroyed, or does not manage his woodlot to the best advantage, it is his own affair. Here again public sentiment and public education are essential, so that the owners may come to take the proper point of view.

Finally, the whole matter is part of the general conservation movement. Conservation means the wise use of our forests and of all our natural resources. Since mountain laurel is a part of our forest resources and we need it, we must care for it.

Photo by W. O. Filley

FIRE IS THE WORST ENEMY OF THE MOUNTAIN LAUREL

A wood which contained a beautiful stand of laurel before it was burned over. There is burned over every year by forest fires enough land to grow all the laurel cut for decorative uses.

Photo by W. O. Filley

THE USE OF MOUNTAIN LAUREL FOLIAGE FOR DECORATIVE PURPOSES

Such garlands may not always be used in an artistic fashion, but probably on the whole they add to the beauty of our cities at holiday time. If the laurel used were grown for the purpose, there need be no objection to its use.